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Draft Conceptual Design

Avery Landing Site Removal Action
Avery, Idaho

for
U.S. Environmental Protection Agency on behalf of Potlatch Corporation

December 26, 2012

GeoEngineers

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Avery, Idaho

File No. 2315-016-02

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1.0 INTRODUCTION

This document presents the conceptual design for the planned removal action being performed by Corporation (Potlatch) for their property at the Avery Landing Site (Site) in Avery, Idaho (Figure 1). The Site is a former railroad roundhouse and maintenance facility used by Chicago, Milwaukee, St. Paul, and Pacific Railroad and is located adjacent to the St. Joe River, approximately one mile west of the town of Avery, in Shoshone County, Idaho. The Site is formally referenced in the U.S. Environmental Agency (EPA) database as Avery Landing (EPA ID No. IDD984666313).

Based on the chemical analytical results of previous environmental investigations, diesel- and heavy oil-range petroleum hydrocarbons and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances (including polycyclic aromatic hydrocarbons [PAHs] and metals) have been released to soil and groundwater at the Site. The migration of these contaminants in the subsurface at the Site has also resulted in historical releases to adjacent surface water body, the St. Joe River.

1.1. Site Cleanup History

Pursuant to agreements with the Idaho Department of Environmental Quality (IDEQ), Potlatch installed and operated a product recovery system in the early 1990s to capture diesel and heavy oil migrating into the St. Joe River. The product recovery system consisted of product recovery trench and multiple extraction wells routed to an oil/water separator. Recovered product was stored in an above ground storage tank (AST) for off-Site disposal. During the system's operation, approximately 1,290 gallons of product (Farallon, 2006) were recovered from the Site. Despite operation of the product recovery system, product discharges were still observed along the banks of the St. Joe River. Under direction from the IDEQ, Potlatch completed additional remedial actions at the Site including installation of a product containment wall and extraction wells in 2000 to prevent product discharges to the St. Joe River. However, as a result of the continued presence of petroleum seeps and sheen in surface water at the Site, the IDEQ requested the assistance of EPA in 2006 to investigate the Site and the continued petroleum discharge to the St. Joe River.

In 2008, Potlatch entered into an Administrative Settlement Agreement and Order on Consent (ASAOC; CERCLA Docket No. 10-2008-0135) with EPA to complete an Engineering Evaluation/Cost Analysis (EE/CA), a Biological Assessment (BA) and a Cultural Resources Evaluation (CRE) for the Site. In accordance with the recommended removal action alternative presented in the EE/CA dated December 2010 (E&E, 2010) and agreements with EPA, Potlatch will perform remedial excavation activities followed by post-removal action groundwater monitoring to evaluate natural attenuation of Site contaminants.

During the summer/fall of 2012, EPA performed cleanup activities on the parts of the Site owned by Larry and Ethel Bentcik (Bentcik Property) and the Federal Highway Administration (FHWA Property) to remove petroleum contaminated materials from the Site. Additionally, EPA also performed excavation of contaminated materials on property owned by Potlatch (Potlatch Property) to address a portion of the St. Joe River shoreline in which petroleum discharges were historically observed and to install stable side slope transitions between the Bentcik and FHWA Property excavation areas and the Potlatch property.

1.2. Cleanup Objectives

In general, the EPA's selected removal action requires the excavation of source material that is observed to contain levels of petroleum contamination (diesel and heavy oil) in excess of the field screening criteria (field screening criteria is described in Section 2.4). Removal of the source material is expected to significantly reduce or eliminate the source of contamination at the Site and prevent future discharge of petroleum hydrocarbons into the St. Joe River. Residual contamination remaining at the Site will attenuate by way of natural processes over-time. The objectives of the Potlatch Property removal action are to:

- Remove the remaining components of the product containment, collection, and extraction systems that were installed as part of previous remedial actions;
- Remove soil exceeding field screening criteria within the upland and bank areas;
- Remove, treat, and/or manage petroleum product that is present as light Non-Aqueous Phase Liquids (LNAPL) observed on groundwater within the remedial excavation greater than one-tenth (0.1) inch thickness;
- Dispose of waste streams in accordance with CERCLA's off-site rule requirements; and
- Restore portions of the Site affected by the removal action including river bank reconstruction, backfilling, compaction, grading and re-vegetation.

The conceptual design and preliminary approach for the removal action that will performed by Potlatch on their property is summarized in Section 2.0.

2.0 CONCEPTUAL DESIGN AND PRELIMINARY APPROACH

Based on the results of previous environmental investigations completed by Potlatch and others, the Potlatch Property removal action is estimated to include excavation of approximately 47,000 in-place cubic yards (cy) of overburden soil overlying the contaminated soil and approximately 15,000 cy of contaminated soil. The remediation area is approximately 100,500 square feet (2.3 acres) in size. The actual quantities of excavated soil may be greater or less than these estimates based on the results of visual observations and field screening at the excavation limits (see Section 2.4). In general, overburden soil will be excavated and stockpiled for use as backfill to access the underlying petroleum hydrocarbon contaminated soil. Excavation activities will generally be sequenced to reduce the potential recontamination of backfilled soils.

Site features, including the location of the Potlatch, Bentcik and FHWA properties and residual petroleum contamination area are shown on Figure 2.

2.1. Temporary Site Controls

Temporary controls will be utilized to control Site access, traffic, erosion/stormwater pollution, dust, noise and spills. The planned temporary Site controls for the Potlatch Property removal actions are shown on Figure 3.

2.1.1. *Site Access Control*

Temporary fencing, barricades, signage and/or traffic control flaggers will be used, as necessary, to control access to the Site. Prior to the start of work, the cleanup contractor for Potlatch will be responsible for installing fencing and/or other means to restrict general public access to work areas (i.e., construction staging, materials management and excavation water detention areas) at the Site. Site access control will be maintained for the duration of the project. Signage will be posted at the Site to prohibit unauthorized entry of persons to the work areas.

Vehicle access to the Site will be from Hwy 50 at one of three access points (see Figure 3). Flaggers will be used, as necessary, to control vehicle traffic into and out of Site. To the extent practical, all construction related equipment will be contained with the established work areas of the Site. Site access controls will be maintained throughout the duration of the project.

2.1.2. *Erosion Control and Stormwater Pollution Prevention*

Best management practices (BMPs) will be used to control erosion during construction. The BMPs to be implemented during this removal action are based on the Catalog of Stormwater Best Management Practices for Idaho Cities and Counties (IDEQ, 2005), the U.S. Army Corps of Engineers Nationwide Permit 20, and professional experience.

Erosion control measures to prevent stormwater pollution will include:

- Use of silt fencing, silt dikes, fabric filter fences, straw bales, interceptor swales, wattle and rock check dams, and/or similar BMPs to prevent sediment from entering the St. Joe River;
- Stabilizing Site access points using quarry spalls or other effective materials to minimize the tracking of sediment onto the Hwy 50;
- Street cleaning as necessary, to remove tracked out soil; and
- Securing and covering of stockpiled soil with soil berms and/or plastic sheeting to protect from wind, rain, and other disturbances, as conditions warrant.

2.1.3. *Dust and Noise Control*

Site work may generate airborne dust. Engineering controls will be used during construction, as necessary, to prevent the off-site transport of airborne particulates. Controls will include wetting or covering exposed soil and stockpiles to prevent dust generation.

Construction noise will be generated by a variety of construction equipment, including truck engines, generators and other small engines, and earthmoving equipment. Construction noise will be generally limited to daylight hours and is not expected to create adverse impacts due to the lack of sensitive noise receptors in the area.

2.1.4. *Spill Response*

A Contingency Plan will be implemented to reduce the risk of spills and to establish an efficient response strategy. An emergency spill response and containment kit will be located at the Site to address spills. Spilled material and expended clean-up materials will be disposed of off-Site at an appropriate disposal facility.

Refueling or machinery maintenance operations will be conducted in a manner that will prevent releases to Site soils or the adjacent St. Joe River. Fuel hoses, fuel drums, oil or transfer valves and fittings, and any motorized equipment used during the project will be inspected daily for drips or leaks.

2.2. Construction Site Layout

As part of Site preparation, access roads, construction staging areas, excavation water detention areas, and temporary facilities will be constructed to support the removal action. Access roads and staging pads, if constructed, may require limited grading and placement of a geotextile and/or gravel on the graded surface. The actual locations of the temporary access roads, staging areas, equipment pads, temporary construction facilities (travel trailer, water treatment system, temporary utilities, etc.), and vehicle loading zones will be determined in the field prior to the start of the removal action. To the extent feasible and practicable, temporary staging, water detention and facilities will be located in areas that will not interfere with construction operations or vehicle traffic. The existing stockpile area that was constructed by EPA for the Bentcik and FHWA property removal action is expected to be used, as necessary, for the Potlatch property removal action.

Upon completion of the Potlatch property removal action, areas used for staging, water detention, stockpiling and temporary facilities, including the facility constructed by EPA will be restored (i.e., gravel and/or geotextile removed and area seeded to prevent erosion).

2.2.1. *Construction Staging Area*

A portion of the Potlatch Property west of the excavation areas will be made available for staging. The staging area is expected to be used for placement of construction trailers, contractor vehicle parking and storage of supplies. The tentative location of the Construction Staging Area is shown relative to the Site on Figure 3.

2.2.2. *Materials Management Area*

The existing material management area constructed by EPA is expected to be used for the temporary storage of soil generated from the Potlatch Property removal action (see Figure 3). The existing material management areas is lined with a minimum of 40-mil thick, chemical resistant, impermeable liner surrounded by a 2-foot-tall earthen dike with 1:1 slopes. The surface within the material management area is sloped (at an approximate 1 percent grade) toward a collection sump to remove any excess water resulting from precipitation or soil dewatering. The materials management area has been constructed to stockpile approximately 15,000 cy of soil. During non-working hours (i.e., at night or on weekends), the stockpiles will be covered and secured from wind, rain, and other disturbances, as appropriate.

Currently, it is assumed that overburden and transition zone material generated by the removal action will be temporarily stockpiled to the extent possible, adjacent to the excavation area for use as backfill once the cleanup objectives have been achieved within the active excavation. In addition, it is assumed that contaminated soil generated by the removal action will be directly loaded into trucks to the extent possible, and transferred from the property for permitted landfill disposal. However, the material management area will be maintained throughout the duration of the removal action for use as needed.

2.2.3. *Excavation Water Detention Area*

The excavation water detention will be located in the general vicinity of the remedial excavation area and will be used to temporarily store and treat water generated during the removal action prior to discharging to the St. Joe River or use on Site for dust control. The tentative location of the Excavation Water Detention Area is shown on Figure 3. Specific details of the water treatment system are further discussed below (see Section 2.4.3).

2.3. Site Preparation

2.3.1. *Utility Locate and Services*

Prior to start of Site work, local utility companies will be contacted to obtain service for the temporary on-Site facilities that will be utilized during implementation of the removal action (i.e., water-treatment facility, temporary construction trailers, etc.). In addition, utility locating agencies will be contacted in order to identify and protect utilities that exist at the Site that are located within the work area. Active utilities located within/adjacent to the excavation areas such as the existing community sewer line will require demarcation and establishment of excavation offset distances for their protection. Protection offsets will be established based on the utility locates to minimize disturbance to the active utilities as shown in Figure 4.

2.3.2. *Clearing and Grubbing*

Vegetated areas will be cleared and grubbed to the extent required to complete the remedial excavation activities at the Site. Clearing will consist of the falling, trimming, and cutting of brush and shrubs. Cleared vegetation either will be cut off flush with or below the original ground surface or removed entirely. Clearing and grubbing activities will be limited to only those areas requiring soil disturbance for performing remedial excavation or installation of temporary site controls and/or staging areas.

Large, established trees will be allowed to remain in place to the extent practicable. An excavation offset will be established around each of the established trees. The offset limit will be located at approximately the distance the branches extend from the tree trunk (the drip line). Excavation will be stopped at the established tree offset limits to avoid disruption to the trees as shown in Figure 4.

2.3.3. *Well Decommissioning*

Monitoring and product recovery wells located within the removal area will be decommissioned in accordance with applicable rules and regulations prior to removal activities. Appropriate measures will be taken to protect monitoring wells that are located outside of the removal area during construction activities.

Unless previously decommissioned by EPA, it is currently anticipated that monitoring wells GA-1, GA-4, EMW-03, EMW-04, EMW-05, 1024, 1025, 1030, 1031 and HC-1R, and product extraction wells EW-1 and CW-01 will require decommissioning prior to the start of work.

2.3.4. *Cultural Resources*

In May 2012, Applied Archeological Research, Inc. (AAR) conducted a cultural resources survey at the Site on behalf of EPA in response to recommendations provided by the Idaho State Historic

Preservation Office in their Class I Inventory Literature Review letter dated April 21, 2011 (ISHS, 2011). During the cultural resources survey, AAR identified four architectural features and three scatters of historical or likely historical artifacts and/or demolition debris at the ground surface on the Potlatch Property (AAR, 2012). Architectural features include concrete foundations for a roundhouse bay stall, lead railroad tracks to the roundhouse bay, boiler house and turntable. Artifact scatters include brick debris and glass bottles with limited markings. Based on these findings, AAR recommended that: 1) a cultural resource monitor observe excavation activities in the vicinity of the four identified architectural features to ensure that the details of the layout, construction and engineering of these feature are documented; and 2) field personnel conducting the removal action be made aware of the potential archeological artifacts at the Site. The approximate locations of the four identified features are shown on Figure 4.

2.4. Soil Excavation

Soil excavation will be performed using commonly available excavation equipment and methods. Soil excavation activities, including the excavation extent and sequence, soil segregation and stockpiling, excavation dewatering, water treatment, and backfilling and compaction are summarized below.

2.4.1. *Field Screening*

Soil generated by the removal action will be screened in the field for the presence of petroleum hydrocarbons to determine whether soil is acceptable for reuse on Site and to determine the lateral and vertical extent of the remedial excavation.

The extent of excavation will be based on visual evidence of petroleum-contaminated soil in the field. The procedure for conducting the petroleum sheen test will consist of collecting a representative soil sample and applying water until the soil is saturated and water collects around it.

Visual classification of the petroleum-related sheen from representative soil samples will be evaluated relative to the following field screening criteria:

- None (no sheen visually detected);
- Sheen (oil film present, but does not display rainbow); and
- Rainbow (definite oil sheen, film, or product that displays rainbow).

A passing test will be defined as soil that does not exhibit rainbow sheen. If rainbow sheen is observed in a sample, additional excavation will be required and re-screening will be performed until a passing test is achieved. Excavation will stop where the representative soil samples pass the field screening tests.

2.4.2. *Excavation Extent and Sequence*

It is anticipated that the excavation will start in the northeast portion of the Potlatch Property and progress to the southwest toward the St. Joe River to minimize the potential for recontamination of the backfill material. The excavation plan to remove contaminated soil at the Site is shown on Figure 4 and in generalized cross-section on Figures 5 and 6.

In response to AARs cultural resource recommendations (see Section 2.3.4), field personnel conducting the removal action will be made aware of the potential archeological artifacts that may be present at the Site. In addition, an archeological monitor will be present to document architectural features located within limits of excavation to document the layout, construction and engineering of these features prior to their disturbance.

The contact between the overburden and underlying petroleum contaminated soil as well as the lateral extent of contaminated soil will be determined based on field screening evidence of petroleum contamination. Remedial excavation activities will extend laterally until field screening evidence of petroleum contamination is no longer observed or until an established protective offset is reached. Remedial excavation activities will extend vertically until field screening evidence of petroleum contamination is no longer observed or to a depth no greater than two feet below the local groundwater table elevation (which is an average depth of approximately 17 feet below ground surface [bgs]). The excavation sidewalls will be maintained at a 1.5:1 slope. If necessary, the excavation sidewalls will be laid back further to maintain a stable slope.

Backfill soil placed within the transition zone between the FHWA and Potlatch, and Bentcik and Potlatch removal action areas by EPA (see Figure 4) will be removed and field screened to verify that this material has not been impacted by the residual petroleum contamination present on the Potlatch Property.

Clean overburden and transition zone backfill material generated during the excavation will be temporarily stockpiled adjacent to the excavation for reuse to fill the excavated area. It is anticipated that backfilling activities will be conducted concurrently with remedial excavation activities to minimize size of the open excavation area. Limitations in the available area adjacent to the excavation may require that overburden and/or transition zone backfill soil be temporarily stockpiled within the material management area.

Depending on the amount of rock estimated to be present, the excavated material generated from the petroleum-contaminated layer may be screened to segregate out the rock for reuse as backfill. The separated rock material would be processed by the screening machine to remove contaminated soil to the extent practicable. Petroleum contaminated rock in which cleaning of the attached dirt is unsuccessful or the level of contamination makes cleaning impractical, will be transported off site for landfill disposal.

Based on historical records, it is possible that reinforced concrete foundations from former railroad structures may be encountered during soil removal activities. If encountered, these foundations will be broken into manageable-sized pieces and stockpiled on Site. Concrete debris which does not exhibit evidence of contamination will be used as backfill. Concrete debris will be cleaned of contaminated soil to the extent practical and used as backfill. Petroleum contaminated concrete debris in which contaminated soil removal is unsuccessful or the level of contamination makes the soil removal impractical will be transported off site for landfill disposal.

Multiple utilities and established trees are located within the anticipated footprint of contaminated soils. Excavation will be offset from infrastructure and established trees for the purposes of damage protection as shown in Figure 4. Contaminated soils will be removed to the extent practicable within the offset areas, while maintaining stable side slopes and safe work conditions. Within the

established offset areas some contaminated soil will remain and will be covered by backfilling. In such cases, a woven geotextile fabric will be placed at the excavation limit to serve as an environmental marker between the residual petroleum contamination and backfill.

In the event that Site conditions prohibit further excavation of contaminated materials (i.e., bedrock is encountered in the side walls or at the base of excavation or the petroleum contamination extends beyond two feet of the groundwater table, remedial excavation activities will be halted. In such cases, a woven geotextile fabric will be placed at the excavation limit to serve as an environmental marker between the residual petroleum contamination and backfill.

Shoreline excavation activities will occur during the allowable in-water work period from July 15 to September 1, 2013 to minimize potential negative impacts on the aquatic environment. Further details on the shoreline excavation are presented in Section 2.4.7.

2.4.3. *Excavation Dewatering*

Dewatering activities will be completed as necessary to manage the groundwater level within the excavation area during removal activities. To minimize the need for dewatering, soil below the groundwater table will be removed during anticipated periods of low water in the St. Joe River (July to October). Further, to reduce the amount of dewatering, the area of open excavation will be minimized to the extent practical. .

Based on observed conditions during the FHWA and Bentcik Property removal actions, it is anticipated that pump(s) capable of removing water at a rate of up to 100 gallons-per-minute (gpm) with a floating suction line will be sufficient to support dewatering of the excavations. If present, free-phase petroleum hydrocarbons or oil sheen on the groundwater surface will be contained using oil sorbent booms or similar to prevent recontamination of backfilled soil. To prevent contamination of the saturated zone below the petroleum contamination, the groundwater level within the excavation will not be lowered to an elevation below the smear zone.

The dewatering system will be installed to allow continuous operation without interfering with other construction activities. Water removed from the excavation will either be discharged (untreated) to other parts of the contaminated area or treated as described in the Section 2.6 and discharged directly to the St. Joe River or into infiltration ponds that drain to the St. Joe River. Treated water may also be re-used for dust suppression in the construction area. BMPs will also be used as necessary, to direct stormwater away from the excavation areas to minimize the volume of water requiring treatment.

2.4.4. *Excavated Soil Stockpiling and Dewatering*

To the extent practical, excavated overburden soil will be stockpiled temporarily near the excavation area to minimize cross site transport and to make the material readily available for use as backfill. Contaminated soil generated from below the saturated zone will be stockpiled within the excavation area and allowed to dewater such that visible evidence of dewatering from the stockpile is no longer

observed and a representative soil samples obtained from the stockpile passes the Paint Filter Test[1] (EPA Method 9095). Liquids dewatering from the stockpile will be contained within the excavation area. Oil sorbent booms, pads and/or suction pumps will be used (as necessary) to collect free-phase product, oil film and sheen from the surface of the groundwater table to meet the Site cleanup objectives. The contaminated soil will be loaded directly to trucks or brought to the materials management area for storage prior to transport.

Dewatering effluent within the materials management area will be transferred to the water treatment system for processing prior to discharge.

2.4.5. *Backfill of Removal Area*

Clean overburden and transition zone material generated by the Potlatch Property removal action will be placed within the completed areas of the excavation concurrent with the remedial activities. A separation zone will be maintained between the excavation and backfilling activities to minimize the potential for cross contamination. Clean backfill will be imported to the Site as required to meet final grades. Sources of backfill material may include commercial quarries and/or other local sources (e.g., Potlatch, Shoshone County, or Forest Service).

Following verification that the excavation sidewalls and base meet the removal action objectives, backfill will be placed in the excavation and compacted.

2.4.6. *Product Recovery and Containment Barrier System Removal*

Existing monitoring wells and extraction wells installed as part of the 1994 product recovery system and 2000 containment barrier system will be decommissioned in accordance with applicable rules and regulations prior to the start of excavation. It is anticipated that the remnant components of these systems (i.e., polyvinyl chloride [PVC] pipes, monuments and geotextile fabric) will be removed during the excavation.

Other components of the product recovery system were previously removed from the Site.

2.4.7. *Removal Activities Along the St. Joe River*

As part of the removal activities at Avery Landing, portions of the shoreline are expected to be excavated and reconstructed in order to address petroleum contamination. Shoreline excavation activities will occur during the allowable in-water work period from July 15 to September 1, 2013 to minimize potential negative impacts on the aquatic environment.

Removal activities along the St. Joe River will require the removal of the existing shoreline armoring (i.e., rip rap), base rock and/or geotextile to access overburden and underlying contaminated soil. Armoring removed from the shoreline will be evaluated for the presence of staining, sheen and/or free-phase product. Armor that exhibits field screening evidence of contamination will be segregated,

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[1] Field test that involves suspending a conical paint filter (mesh number 60 +/- 5 percent) filled with a representative, approximate 100 gram soil sample from a tripod or ring stand for five minutes (EPA, 2012). If any liquid drips from the filter, the material will be deemed to contain free liquids and will be allowed to further dewater until which time representative samples pass the paint filter test.

cleaned to the extent practical and the armor reused during reconstruction of the shoreline. If cleaning of the armor stone is unable to remove the contaminated material, the armor stone will be transported from the Site for permitted landfill disposal. Additional armor stone may be imported to the Site, as necessary to restore the St. Joe River shoreline. Bank stabilization and restoration are further described in the Section 2.10.

During shoreline excavation activities, BMPs including but not limited to use of containment berms, silt curtains and/or oil sorbent booms will be implemented and maintained in order to prevent sediment and/or petroleum hydrocarbon discharge into the St. Joe River. Generally, the same practice developed by EPA in their 2012 shoreline excavations will be utilized for the shoreline removal. By this method, a berm of soil was left in place at the base of the slope to minimize infiltration of river water into the excavation.

The erosion and sediment practices implemented along the shoreline will comply with the general conditions established under the U.S. Army Corps of Engineers Nationwide Permit 20 (Response Operations for Oil and Hazardous Substances; USACE, 2007) to ensure compliance with State of Idaho water quality standards.

2.5. Off-Site Disposal and Recycling

2.5.1. *Petroleum-Contaminated Soil*

During excavation, petroleum-contaminated soil either will be directly loaded into trucks and transported from the Site for permitted landfill disposal or stockpiled in containment cells located with the material management area for later disposal. Based on communications with Waste Management's Medical Lake Landfill (proposed landfill for the removal action), existing soil sample data will be used to profile the waste and additional sampling of the excavated material will not be required.

Petroleum-contaminated soil transfer from the Site for landfill disposal will be completed in accordance with applicable state and federal solid waste regulations.

2.5.2. *Recovered Free Product*

Free product that is recovered during the operation of the dewatering system will be transferred to 35 or 55-gallon drums and stored on Site until completion of remedial excavation. Representative samples will be obtained from this material as required for acceptance to a licensed disposal or recycling facility.

2.5.3. *Hazardous Wastes, Construction Debris and Other Material*

Based on sample results of previous environmental studies and sample results of stockpile testing completed for the Bentcik and FHWA Property removal actions, it is not anticipated that soil generated from the excavation will designate as a dangerous waste. In the event that buried debris such as underground storage tanks (USTs), batteries, capacitors, transformers or similar are encountered, additional testing will be completed to evaluate whether contaminants (metals and/or polychlorinated biphenyls [PCBs]) exceed the criteria for dangerous waste. Soil designated as a dangerous waste will be segregated and stockpiled on Site pending treatment, waste profile authorization and/or off-Site disposal.

Debris from historic railroad operations including, brick, glass, concrete, wood, etc. will be returned to the excavation unless visual evidence of petroleum-contamination is observed or are determined to be historical artifacts of significance. Debris in which visual evidence of contamination is observed will be cleaned to the extent practical and used to backfill the excavation. Debris in which cleaning is unsuccessful or impractical will be transferred from the Site for permitted landfill disposal.

2.5.4. *Recycled Materials*

During the course of the FHWA and Bentcik Property removal actions, significant quantities of metal debris were encountered in subsurface soil. Similar to the management plan used by EPA, metal debris will be segregated to the extent practical and transferred to a recycle facility.

2.6. Water Treatment

Water generated from equipment and personnel cleaning, soil stockpile dewatering, dewatering of excavation areas or resulting from the accumulation of stormwater, either will be discharged (untreated) to infiltration areas established within other parts of the contaminated area or treated prior to discharge into the St. Joe River or for dust control. As described above, excavation activities will extend vertically until field screening evidence of petroleum contamination is no longer observed or to a depth no greater than two feet below the local groundwater table elevation (which is an average depth of approximately 17 feet bgs). In order to minimize the amount of dewatering required, Site work will be completed during periods of low groundwater levels.

The temporary water treatment system is designed to treat contaminants previously detected in groundwater at concentrations exceeding Idaho surface water quality criteria (Idaho Administrative Code [IAC] 58.01.02). Table 1 presents a summary of analytes detected in groundwater at the Site and corresponding maximum detected concentrations. System design, initial system startup testing and operational testing are described in the following sections (Sections 2.6.1 through 2.6.3).

2.6.1. *System Design*

The temporary water treatment system will be designed to treat up to 250 gpm based on observed water conditions during the Bentcik and FHWA Property removal actions. Normal influent flow rates are expected to be less than the design maximum flow conditions. The water treatment system will be designed to treat waste water to meet the surface water quality criteria specified in the Idaho Administrative Code (2011) summarized in Table 2.

Temporary water treatment system components anticipated for the Potlatch Property removal action are summarized in the following sections. In addition to the primary system components summarized below, temporary piping, flow meters, and valves will also be required.

The temporary water treatment system will be constructed within the excavation water treatment detention area generally shown on Figure 3. BMPs will be implemented to prevent the release of untreated wastewater to the St. Joe River (i.e., silt fencing, soil berms, piping and/or trenches will be used to direct water into the excavation areas).

2.6.1.1. OIL/WATER SEPARATOR

Waste water generated from the Site for treatment will pass through an oil/water separator prior to transfer into pre-treatment settling tanks. The oil/water separator will be a gravity-type unit capable

of removing gross free-phase product and will include collection chamber(s) for settable sludge/solids recovery. Recovered product will be stored in 55-gallon drums.

2.6.1.2. PRE-TREATMENT SETTLING TANK

Following oil/water separation, waste water will be pumped into the settling tanks with a minimum storage capacity of 40,000 gallons. Additional pre-treatment settling tank(s) will be added to the treatment system as necessary to manage waste water generated during construction.

2.6.1.3. ELECTRO-COAGULATION TREATMENT SYSTEM

An electro-coagulation (EC) treatment system will be employed to treat waste water for turbidity, suspended solids and metals. Waste water passing through the EC treatment system will be monitored for pH and turbidity using in-line sensors linked to automated control valves for recirculation and/or discharge.

2.6.1.4. POST-TREATMENT SETTLING TANK

Following EC treatment, waste water will be pumped to post-treatment settling tank(s) prior to passing through a media filter to remove suspended particulates. The post-treatment settling tank(s) will have a minimum storage capacity of 20,000 gallons. Additional post-treatment settling tank(s) will be added to the treatment system as necessary to manage waste water generated during construction.

2.6.1.5. GRANULAR ACTIVATED CARBON SYSTEM

A granular activated carbon (GAC) system will be employed to treat waste water for petroleum-related compounds. The GAC system will have a minimum of two carbon vessels operating in series. Water quality testing (see Section 2.6.3) will be conducted to evaluate water effluent of the primary vessel for breakthrough of constituents exceeding Idaho Administrative Code (2012) surface water quality criteria (see Table 2). Testing parameters and frequency are summarized below (see Section 2.6.2).

When test results indicate that the primary GAC vessel has become spent (i.e., breakthrough of constituents above permitted limits are detected), the primary carbon vessel will be replaced. At this time the secondary vessel will be moved to the primary position, and a new carbon vessel will be added in the secondary position. This sequence of changing out carbon vessels will ensure continuous treatment and eliminate the potential for contaminants passing through the treatment system.

2.6.2. *System Startup Testing*

Following installation of the initial water treatment system, water quality sampling activities will be conducted to evaluate the performance of the treatment system and ensure that effluent water generated is in compliance Idaho surface water standards (IAC 58.01.02).

At system startup, groundwater generated from the Site will be pumped through the treatment system and tested. Initial test results will be used to confirm compliance with the water quality discharge criteria (see Table 2). If initial test results exceed the water quality discharge criteria, modifications to the water treatment system will be made as appropriate and follow up testing will be complete. No water will be discharged from the system until confirmation that the water quality discharge criteria presented in Table 2 has been achieved.

Water generated during system startup will be stored in above ground storage tanks pending initial test results. If the water is not suitable for discharge, the water will be recycled through the system and retreated. Initial treatment system water samples will be obtained from influent and effluent sample locations and submitted for chemical analysis of the following:

- Metals (arsenic, cadmium, copper, lead, thallium and zinc) using EPA Method 200.7/200.8;
- Semi-volatile organic compounds (SVOCs) using EPA Method 8270;
- Polycyclic Aromatic Hydrocarbons (PAHs) using EPA Method 8270SIM; and
- PCB using EPA Method 8082.

Samples will be placed in laboratory supplied containers, filled to minimize headspace and placed in a cooler with ice pending chemical analysis.

The general, startup testing of the temporary water treatment system shall consist of treating a minimum of 10,000 gallons of water collected from the Site. During this time, flow monitoring and pressure readings will be recorded from all of the gauges and flow meters, as necessary, in order to demonstrate that the system is operating properly. Adjustments will be made to the system as necessary in order to maintain a continuous flow rate while meeting the operating requirements for each system component.

2.6.3. *Operational Testing*

Operational testing of the water treatment system will be conducted once initial samples confirm that treated waste water meets the Idaho surface water quality discharge criteria (see Table 2). Operational water samples will then be collected on a weekly basis during normal operation of the system to monitor the discharge concentrations. Operational samples will be obtained between the primary and secondary GAC vessel and from the discharge point and submitted for chemical analysis of SVOCs, PAHS, PCBs and metals. If discharge limits presented in Table 2 are exceeded, the system will be shut down and adjustments made, as necessary, to meet the discharge requirements. Exceedances will be recorded and reported as required.

In addition to chemical analysis, effluent water will be measured in the field for settable solids, turbidity and evaluated for the presence of surface water sheen. Settable solids shall not exceed 1 milligram per liter per hour. Turbidity shall not exceed background levels by more than 5 NTUs when the background is 50 NTU or less; or a 10 percent increase in turbidity when the background turbidity is more than 50 NTU. Effluent water exhibiting sheen (oil film with rainbow color) will not be discharged to the St. Joe River.

2.7. Site Sampling and Monitoring

2.7.1. *Excavation Area Sampling*

Prior to backfilling, soil samples will be collected to document conditions at the final extents of the excavation areas. Samples will be collected from the sidewalls and base of the final excavation limit once field screening results show no rainbow sheen (as described in Section 2.4.1). Excavation base samples will be obtained on a grid with at approximate intervals of 150 feet (along plume length) by 100 feet (along plume width), as shown on Figure 7. Excavation sidewalls samples will be obtained

every 300 linear feet. Excavation sidewall samples will be obtained at the approximate vertical midpoint of the observed petroleum-contaminated soil layer. No sidewall samples will be collected from the transitions between the Potlatch Property and FHWA Property or Bentcik Property since the sidewall is comprised of clean backfill material placed by EPA.

Samples will be collected directly from the soil surface or, depending on stability of the excavation and access to the selected sample location, may be collected from the bucket of the backhoe performing the excavation. Samples collected using a backhoe will be between the bucket teeth away from the metal surfaces. Samples will be placed in laboratory supplied containers, filled to minimize headspace and placed in a cooler with ice pending chemical analysis.

2.7.2. *Off-Site Waste Disposal Sampling*

Based on communications with Waste Management's Medical Lake Landfill (proposed landfill for the removal action), existing stockpile sample data generated by EPA as part of the 2012 excavation activities will be used to profile the waste and additional sampling will not be required. In the event that buried debris such as underground storage tanks (USTs), batteries, capacitors, transformers or similar are encountered, representative soil samples will be obtained to evaluate whether the material designates as a dangerous waste. Any soil designated as a dangerous waste will be segregated and stockpiled on Site pending treatment, waste profile authorization and/or off-Site disposal. Material designating as a dangerous waste will be handled in accordance with applicable state and federal regulations.

Product recovered from the water treatment system will be sampled and tested as required for acceptance to a licensed disposal or recycling facility.

2.8. General Construction and "Green" Practices

BMPs will be employed throughout construction for control of erosion, stormwater, and fugitive dust, and to prevent adverse impacts on wildlife and their habitats. The BMPs to be implemented during the Potlatch Property removal action will be based on the Catalog of Stormwater Best Management Practices for Idaho Cities and Counties (IDEQ, 2005), the U.S. Army Corps of Engineers Nationwide Permit 20, and professional experience.

In addition to implementation of Site BMPs, the following "green" practices will also be employed:

- **Reuse and Recycle** – To the extent practical, Site materials used to construct staging pads and bunkers will be reused to backfill the excavation areas. Overburden soil, transition zone backfill and shoreline armor will be reused on the Site to minimize the quantity of additional materials needed to backfill and stabilize the Site. To the extent practical, larger rock will be separated from the contaminated soil and used for backfill. Vegetation (i.e., trees and bushes) will be used to the extent practical for stormwater bio filtration and habitat restoration. Additionally, BMPs used for site controls (i.e., silt fencing, swales, stormwater piping, etc.) will be reused to the extent practical to reduce overall construction waste. Metal debris generated from the excavation will be transferred from the Site for recycling.
- **Stormwater Management** – BMPs will be used to slow stormwater runoff (i.e. erosion control) and divert water to infiltration areas or excavation areas to minimize the volume of waste water

requiring treatment. Treated waste water will be used for dust control and equipment washing as appropriate to minimize the need for imported water to the Site. In addition, stormwater BMPs such as silt fencing may also serve as site controls (fencing) to prevent the entry of unauthorized personnel to the Site.

- **Reduction of Vehicle Emissions and Fuel Consumption** – Staging areas and soil stockpile locations will be positioned at the Site to reduce the distance that vehicles travel to reduce excess vehicle emissions (i.e., placement of backfill stockpiles adjacent to excavation areas and reuse of on-site materials). Opportunities will be explored to locate and identify local gravel sources for import material. Vehicles not in use will be shut off to reduce excess fuel consumption.

2.9. Site Monitoring and Inspections

2.9.1. *General Construction BMPs*

The contractor and field inspectors for Potlatch will be responsible for monitoring and inspection of site controls and BMPs to ensure the protection the community, workers, and the environment throughout the duration of the removal action. Site controls and BMPs will be inspected regularly to ensure proper function. Site controls and BMPs will be modified as appropriate to meet the project objects.

2.9.2. *Air Monitoring*

Visual monitoring will be conducted throughout the removal action during periods of soil disturbance to evaluate the presence of airborne particulates. Engineering controls will be used during construction (e.g., wetting or covering exposed soil and stockpiles), as necessary, to prevent the off-site transport of airborne particulates.

2.9.3. *Surface Water Quality*

Surface water quality will be monitored regularly during construction activities. Surface water quality monitoring will be conducted at the approximate locations shown on Figure 3 to assess the impact of Site work on the St. Joe River. The proposed upstream location has been selected to assess background conditions. The proposed downstream location has been selected to be downgradient of the planned excavation areas and waste water treatment discharge point. The following parameters will be measured on a weekly basis during excavation and/or active waste water discharge and on a daily basis during shoreline excavation activities:

- Acidity (pH);
- Turbidity; and
- Temperature.

Monitoring will be conducted during construction to identify any water quality problems that may be occurring as a result of construction activities, and to demonstrate compliance with legal and other monitoring requirements, including the water quality criteria and/or targets for the project. Field parameters of pH and temperature will be measured using a Hanna Instruments combination meter or similar. Turbidity will be measured using a Hach turbidimeter or similar. If a water quality problem is indicated from the monitoring results, appropriate actions will be implemented for identification and management of the problem.

2.10. Site Stabilization

Ground surfaces at the Site affected by the Potlatch Property removal action will be restored using stockpiled overburden soil, or imported clean backfill to the approximate grade shown on Figure 8.

Re-vegetation/restoration of these areas is described in the following sections.

2.10.1. *Soil Disturbance Areas*

Disturbed areas of the Site resulting from excavation, soil/equipment staging, and/or the installation of access roads will be re-vegetated with native grasses to minimize the potential for erosion. Native seed mixtures for the area consistent with U.S. Department of Agriculture (USDA) or other local agency-recommended (i.e., U.S. Forest Service or FHWA) species will be used to stabilize Site soil. Seed mixtures will be applied using one or more of the following methods:

- Hydroseeder (option of combining seeding, tackifiers, and tracers);
- Blower equipment with adjustable disseminating device capable of maintaining a constant, measured rate of material discharge that will ensure an even distribution of seed at the rate specified;
- Power-drawn drilling equipment or seeders; and
- Manual seeding method.

Seed will be applied on firm soil with a roughened surface. Areas compacted with vehicle traffic will be disked and/or roughened prior to seed application. If necessary, exposed areas steeper than 3H:1V will be stabilized with a coir matting (or similar) to minimize erosion.

2.10.2. *St. Joe River Shoreline*

Reconstruction of the shoreline will occur after excavation activities are completed and will consist of replacing the shoreline slope to resemble the existing shoreline grade that was in place prior to removal and to match the adjacent sections of shoreline protection.

Following restoration of the shoreline, an approximately 15-foot wide riparian corridor from the top of the river bank slope will be re-vegetated with native plant species to minimize erosion, prevent water quality degradation, and restore overall environmental functions along the St. Joe River. Riparian enhancement may include planting native trees such as western larch (*Larix occidentalis*), black cottonwood (*Populus trichocarpa*), and Douglas fir (*Pseudotsuga menziesii*) and shrubs such as snowberry (*Symphoricarpos albus*), red-osier dogwood (*Cornus stolonifera*), and western serviceberry (*Amelachier alnifolia*). Willow whips (*Salix species*) will be inserted within the reconstructed bulkhead. Trees will be planted on approximately 15-foot centers, while shrubs will be planted on approximately 5-foot centers.

2.11. Roles and Responsibilities

The Potlatch Property removal action will be performed by Potlatch and their contractors under oversight by EPA. Specific details about the key participants and interactions with EPA are summarized below.

- **EPA** – Oversight of the removal action will be conducted by the Federal On-Scene Coordinator for EPA.
- **Potlatch** – The removal action will be managed by Potlatch.
- **Pacific Pile and Marine** – Cleanup contractor for Potlatch for the removal action. Their primary responsibilities will be to mobilize the personnel, equipment, and supplies necessary to implement the removal action. In addition, Pacific Pile and Marine (PPM) will be responsible for the following:
  - Implementation of the removal action;
  - Improving/maintaining access roads;
  - Implantation and monitoring of BMPs; and
  - Spill prevention and control.
- **GeoEngineers, Inc.** – Environmental engineer for Potlatch for the removal action. Their primary responsibilities will be to provide on-Site technical assistance, engineering support and will be responsible for field-screening, collecting analytical samples, and documenting the removal action.

2.12. Public Outreach

Prior to the start of construction, Potlatch will establish a public outreach plan describing the activities that will be carried out to inform state, tribal and local stakeholders on project activities.

2.13. Project Schedule

At this time, it is anticipated that the cleanup contractor for the Potlatch Property removal action will mobilize to the Site in June 2013 to begin implementation of Site and access controls prior to the start of excavation. During this period, BMPs will be installed, staging areas prepared, water treatment system established, and monitoring and/or extraction wells decommissioned. It is anticipated that removal activities will begin after the required controls are in place and will be completed in 2013.

2.14. Removal Action Progress Reporting

Throughout the duration of the removal action, weekly reports will be prepared and submitted to EPA for review. The weekly reports will provide a summary of actions performed and/or completed, analytical data received and their results, planned actions for the subsequent reporting period and any issues or problems arising during the reporting period and their resolution or proposed resolution.

3.0 LIMITATIONS

We have prepared this Conceptual Design Document for use by Potlatch for the Avery Landing Site. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this document was prepared. No warranty or other conditions, express or implied, should be understood.

4.0 REFERENCES

Applied Archeological Research, Inc. (AAR), "Results of a Cultural Resources Survey of the Avery Landing Rail Yard Project Area, Shoshone County, Idaho," prepared for Ecology and Environment, Inc., Seattle, Washington, dated July 20, 2012.

E & E (Ecology and Environment, Inc.), "Draft Final Engineering Evaluation /Cost Analysis, Avery Landing Site, Avery, Idaho," prepared for the United States Environmental Protection Agency, Region 10, dated December 2010.

Farallon Consulting, L.L.C. (Farallon), "Failure Analysis and Preliminary Corrective Action Work Plan, Avery Landing Site, Avery, Idaho," dated March 17, 2006.

Idaho Department of Environmental Quality (IDEQ),"Catalog of Stormwater Best Management Practices for Idaho Cities and Counties," dated September 2005.

Idaho State Historical Society (ISHS), "Class I Inventory (Literature Review) of the Avery Landing Site and Project Area, Shoshone County, Idaho," Letter to Earl Liverman, Environmental Protection Agency Region X, dated April 21, 2011.

United States Army Corps of Engineers (USACE), "Nationwide Permit (20) Oil Spill Cleanup" dated March 19, 2007.

United States Environmental Protection Agency (EPA), Hazardous Waste Test Methods: Method 9095 Paint Filter Test, 2012. http://www.epa.gov/osw/hazard/testmethods/sw846/online/9_series.htm.

Table 1

Summary of Maximum Detected Concentrations in Groundwater[1]

Avery Landing Site

Avery, Idaho

Analyte	CAS No.	Analytical Method	Number of Samples Submitted For Analysis	Number of Detects	Maximum Detected Concentration (µg/L)	Idaho Surface Water Quality Standard[2] (µg/L)
Metals						
Aluminum		EPA 200.7/200.8	21	8	32,200	–
Antimony	7440-36-0	EPA 200.7/200.8	21	16	2.8	5.6
Arsenic	7440-38-2	EPA 200.7/200.8	12	9	**88.6**	10
Barium	7440-39-3	EPA 200.7/200.8	21	21	305	–
Beryllium	7440-41-7	EPA 200.7/200.8	21	2	1.84	–
Cadmium	7440-43-9	EPA 200.7/200.8	21	2	**1.07**	0.6
Calcium		EPA 200.7/200.8	21	21	82,300	–
Chromium (total)	7440-47-3	EPA 200.7/200.8	21	8	35.6	74
Cobalt		EPA 200.7/200.8	21	18	22.9	–
Copper	7440-50-8	EPA 200.7/200.8	21	18	**132**	11
Iron		EPA 200.7/200.8	21	20	80,500	–
Lead	7439-92-1	EPA 200.7/200.8	21	90	**39.8**	2.5
Magnesium		EPA 200.7/200.8	21	21	26,400	–
Manganses		EPA 200.7/200.8	21	21	5,630	–
Mercury	7439-97-6	EPA 7470A/7471B	21	5	0.12	–
Nickel	7440-02-0	EPA 200.7/200.8	21	21	37.8	52
Potassium		EPA 200.7/200.8	21	21	8,130	–
Selenium	7782-49-2	EPA 200.7/200.8	21	2	1.18	5
Silver	7440-22-4	EPA 200.7/200.8	21	1	0.532	3.4
Sodium		EPA 200.7/200.8	21	20	5,350	–
Thallium	7440-28-0	EPA 200.7/200.8	21	1	**1.4**	0.24
Vanadium		EPA 200.7/200.8	21	10	53.2	–
Zinc	7440-66-6	EPA 200.7/200.8	21	14	**32,000**	120

Analyte	CAS No.	Analytical Method	Number of Samples Submitted For Analysis	Number of Detects	Maximum Detected Concentration (µg/L)	Idaho Surface Water Quality Standard[2] (µg/L)
Petroleum Hydrocarbons						
Diesel-Range	68334-30-5	NWTPH-DX	21	14	110,000	–
Heavy Oil-Range	30109	NWTPH-DX	21	10	45,000	–
Volatile Organic Compounds (VOCs)						
Acetone	67-64-1	EPA 8260	9	3	3.2 J	–
Chlorobenzene	108-90-7	EPA 8260	9	2	3.6	130
1,2-Dichlorobenzene	95-50-1	EPA 8260	9	4	0.53 J	420
1,4-Dichlorobenzene	106-46-7	EPA 8260	9	1	0.051 J	63
Semivolatile Organic Compounds (SVOCs)						
4,6-Dinitro-2-methylphenol	534-52-1	EPA 8270	5	1	19 J	–
bis(2-chloroethyl)ether	111-44-4	EPA 8270	9	1	0.028	–
bis(2-Ethylhexyl)phthalate	117-81-7	EPA 8270	9	6	**390**	1.2
Carbazole	86-74-8	EPA 8270	9	3	0.48	–
Dibenzofuran	132-64-9	EPA 8270	9	1	0.02	–
Diethylphthalate	84-66-2	EPA 8270	9	2	0.018	17,000
Di-n-butylphthalate	84-74-2	EPA 8270	9	1	2.5	2,000
Di-n-octylphthalate	117-84-0	EPA 8270	9	1	0.08	–
n-Nitrosodiphenylamine	86-30-6	EPA 8270	9	1	**12**	3.3
Non-Carcinogenic Polycyclic Aromatic Hydrocarbons (PAHs)						
1-Methylnaphthalene	90-12-0	EPA 8270 SIM	21	12	210	–
2-Methylnaphthalene	91-57-6	EPA 8270 SIM	21	12	270	–
Acenaphthene	83-32-9	EPA 8270 SIM	21	17	9.3	670
Acenaphthylene	208-96-8	EPA 8270 SIM	21	9	0.25	–
Anthracene	120-12-7	EPA 8270 SIM	21	16	4.4	8,300
Benzo[g,h,i]perylene	191-24-2	EPA 8270 SIM	21	4	0.51	–
Fluoranthene	206-44-0	EPA 8270 SIM	21	12	4.2	130
Fluorene	86-73-7	EPA 8270 SIM	21	18	34	1,100
Naphthalene	91-20-3	EPA 8270 SIM	21	14	63	–

Analyte	CAS No.	Analytical Method	Number of Samples Submitted For Analysis	Number of Detects	Maximum Detected Concentration (µg/L)	Idaho Surface Water Quality Standard[2] (µg/L)
Phenanthrene	85-01-8	EPA 8270 SIM	21	15	59	–
Pyrene	129-00-0	EPA 8270 SIM	21	12	8.6	830
Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs)						
Benzo[a]anthracene	56-55-3	EPA 8270 SIM	21	6	**1.6**	0.0038
Benzo[a]pyrene	50-32-8	EPA 8270 SIM	21	2	**0.85**	0.0038
Benzo[b]fluoranthene	205-99-2	EPA 8270 SIM	21	3	**0.84**	0.0038
Benzo[k]fluoranthene	207-08-9	EPA 8270 SIM	21	1	0.021 J	0.0038
Chrysene	218-01-9	EPA 8270 SIM	21	9	**3**	1.2
Polychlorinated Biphenyls (PCBs)						
Total PCBs (sum of Aroclors)	1336-36-3	EPA 8082	13	1	**0.028**	0.000064

Notes:

[1]Values referenced from the Engineering Evaluation/Cost Analysis, Avery Landing Site, Avery, Idaho prepared by Ecology and Environment, Inc. dated December 2010.

[2]Values referenced from Idaho Administrative Code 58.01.02.

[3]Values referenced from National Pollution Discharge Elimination System (NPDES) Permit No. ID-G91-0000 for Groundwater Remediation Discharge Facilities in Idaho.

EPA = Environmental Protection Agency

µg/L = micrograms per liter

– = No screening criteria available.

Shading indicates exceedance of surface water quality standard.

Table 2

Summary of Water Treatment System Effluent Discharge Limits

Avery Landing Site

Avery, Idaho

Analyte	CAS No.	Analytical Method	Discharge Limit[1] (µg/L)	Limit Type	Sample Type
Metals					
Arsenic	7440-38-2	EPA 200.7/200.8	10	Daily Maximum	Grab
Cadmium	7440-43-9	EPA 200.7/200.8	0.6	Daily Maximum	Grab
Copper	7440-50-8	EPA 200.7/200.8	11	Daily Maximum	Grab
Lead	7439-92-1	EPA 200.7/200.8	2.5	Daily Maximum	Grab
Thallium	7440-28-0	EPA 200.7/200.8	0.24	Daily Maximum	Grab
Zinc	7440-66-6	EPA 200.7/200.8	120	Daily Maximum	Grab
Semivolatile Organic Compounds (SVOCs)					
bis(2-Ethylhexyl)phthalate	117-81-7	EPA 8270	1.2	Daily Maximum	Grab
n-Nitrosodiphenylamine	86-30-6	EPA 8270	3.3	Daily Maximum	Grab
Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs)					
Benzo[a]anthracene	56-55-3	EPA 8270 SIM	0.0038	Daily Maximum	Grab
Benzo[a]pyrene	50-32-8	EPA 8270 SIM	0.0038	Daily Maximum	Grab
Benzo[b]fluoranthene	205-99-2	EPA 8270 SIM	0.0038	Daily Maximum	Grab
Chrysene	218-01-9	EPA 8270 SIM	1.2	Daily Maximum	Grab
Polychlorinated Biphenyls (PCBs)					
Total PCBs (sum of Aroclors)	1336-36-3	EPA 8082	0.000064	Daily Maximum	Grab

Notes:

[1]Idaho surface water quality criteria referenced from Idaho Administrative Code 58.01.02.

EPA = Environmental Protection Agency

µg/L = micrograms per liter

N
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S

10 0 10
Miles

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: ESRI Data & Maps

Projection: NAD 1983 UTM Zone 11N

Vicinity Map

Avery Landing Site
Avery, Idaho

GeoEngineers

Figure 1

Path: \\sea\Projects\23150 16\GIS\231501602_VicinityMap.mxd Map Revised: 14 December 2012 amanza

Notes

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Base aerial photo from Microsoft bing server (2011).

Legend

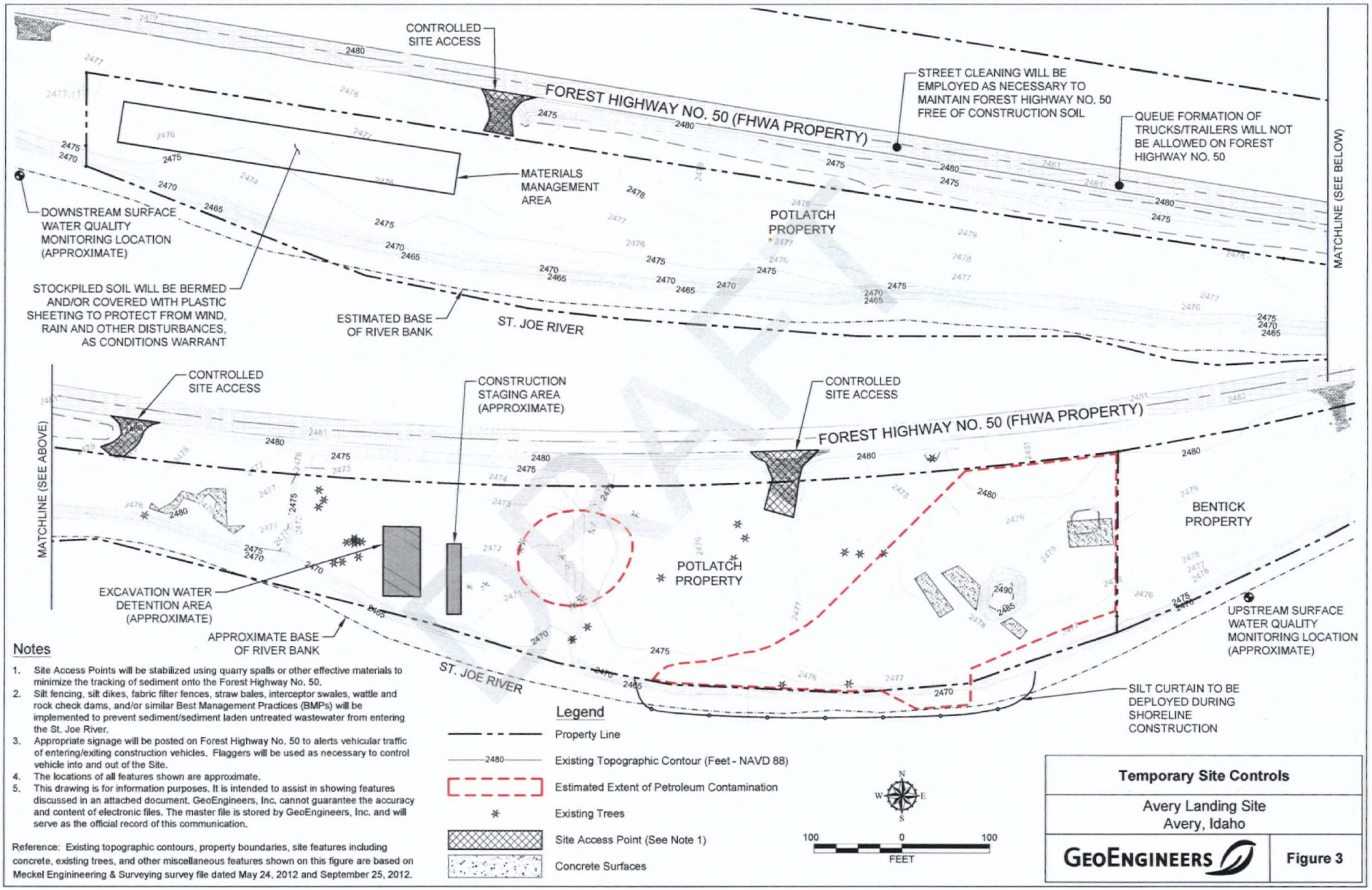
- Property Line
- Estimated Extent of Contamination
- FHWA — Federal Highway Administration
- Flow Direction

N W E S

200 0 200
FEET

Site Plan	
Avery Landing Site Avery, Idaho	
GeoEngineers	Figure 2

P:\2\23150102\CAD\PERMIT FIGURES\23150102-02 FIG 2 SITE PLAN.DWG\TAB:LANDSCAPE MODIFIED BY THICHAUD ON DEC 26, 2012 - 12:42



Notes

1. Site Access Points will be stabilized using quarry spalls or other effective materials to minimize the tracking of sediment onto the Forest Highway No. 50.
2. Silt fencing, silt dikes, fabric filter fences, straw bales, interceptor swales, wattle and rock check dams, and/or similar Best Management Practices (BMPs) will be implemented to prevent sediment/sediment laden untreated wastewater from entering the St. Joe River.
3. Appropriate signage will be posted on Forest Highway No. 50 to alerts vehicular traffic of entering/exiting construction vehicles. Flaggers will be used as necessary to control vehicle into and out of the Site.
4. The locations of all features shown are approximate.
5. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Existing topographic contours, property boundaries, site features including concrete, existing trees, and other miscellaneous features shown on this figure are based on Meckel Engineering & Surveying survey file dated May 24, 2012 and September 25, 2012.

Legend

- Property Line
- 2480 Existing Topographic Contour (Feet - NAVD 88)
- Estimated Extent of Petroleum Contamination
- Existing Trees
- Site Access Point (See Note 1)
- Concrete Surfaces

N W E S

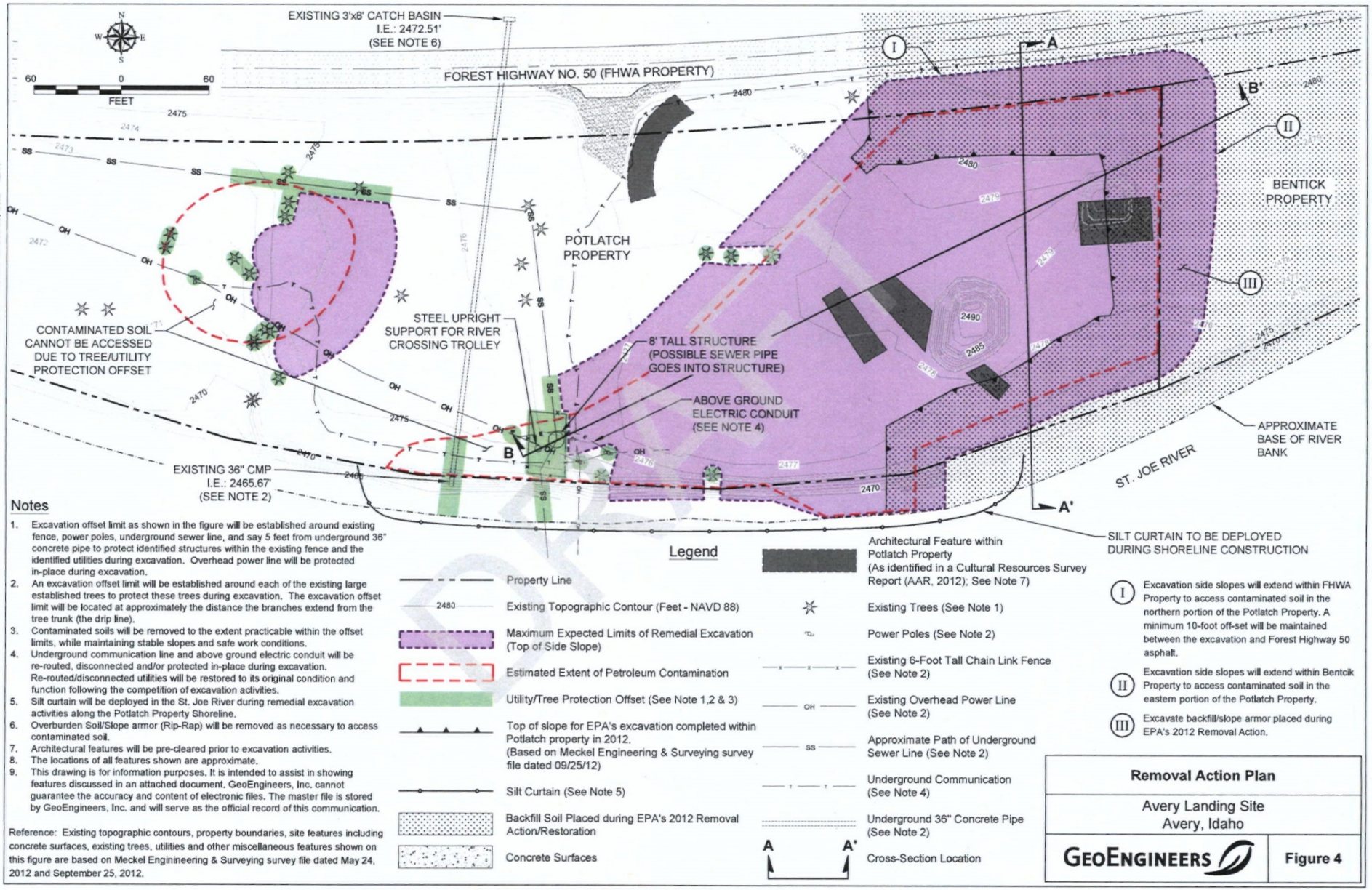
100 0 100
FEET

Temporary Site Controls

Avery Landing Site
Avery, Idaho

GeoEngineers | Figure 3

P:\2\23150\01\02\CAD\Permit Figures\23150-02 Fig 3 Temporary Controls Plan.dwg\TAB:LANDSCAPE MODIFIED BY TMICHAUD ON Dec 26, 2012 - 12:45



Notes

1. Excavation offset limit as shown in the figure will be established around existing fence, power poles, underground sewer line, and say 5 feet from underground 36" concrete pipe to protect identified structures within the existing fence and the identified utilities during excavation. Overhead power line will be protected in-place during excavation.
2. An excavation offset limit will be established around each of the existing large established trees to protect these trees during excavation. The excavation offset limit will be located at approximately the distance the branches extend from the tree trunk (the drip line).
3. Contaminated soils will be removed to the extent practicable within the offset limits, while maintaining stable slopes and safe work conditions.
4. Underground communication line and above ground electric conduit will be re-routed, disconnected and/or protected in-place during excavation. Re-routed/disconnected utilities will be restored to its original condition and function following the competition of excavation activities.
5. Silt curtain will be deployed in the St. Joe River during remedial excavation activities along the Potlatch Property Shoreline.
6. Overburden Soil/Slope armor (Rip-Rap) will be removed as necessary to access contaminated soil.
7. Architectural features will be pre-cleared prior to excavation activities.
8. The locations of all features shown are approximate.
9. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Existing topographic contours, property boundaries, site features including concrete surfaces, existing trees, utilities and other miscellaneous features shown on this figure are based on Meckel Engineering & Surveying survey file dated May 24, 2012 and September 25, 2012.

Legend

- Property Line
- 2480 — Existing Topographic Contour (Feet - NAVD 88)
- Maximum Expected Limits of Remedial Excavation (Top of Side Slope)
- Estimated Extent of Petroleum Contamination
- Utility/Tree Protection Offset (See Note 1,2 & 3)
- Top of slope for EPA's excavation completed within Potlatch property in 2012. (Based on Meckel Engineering & Surveying survey file dated 09/25/12)
- Silt Curtain (See Note 5)
- Backfill Soil Placed during EPA's 2012 Removal Action/Restoration
- Concrete Surfaces
- Architectural Feature within Potlatch Property (As identified in a Cultural Resources Survey Report (AAR, 2012); See Note 7)
- Existing Trees (See Note 1)
- Power Poles (See Note 2)
- Existing 6-Foot Tall Chain Link Fence (See Note 2)
- OH — Existing Overhead Power Line (See Note 2)
- SS — Approximate Path of Underground Sewer Line (See Note 2)
- Underground Communication (See Note 4)
- Underground 36" Concrete Pipe (See Note 2)
- A A' — Cross-Section Location

(I) Excavation side slopes will extend within FHWA Property to access contaminated soil in the northern portion of the Potlatch Property. A minimum 10-foot off-set will be maintained between the excavation and Forest Highway 50 asphalt.

(II) Excavation side slopes will extend within Bentcik Property to access contaminated soil in the eastern portion of the Potlatch Property.

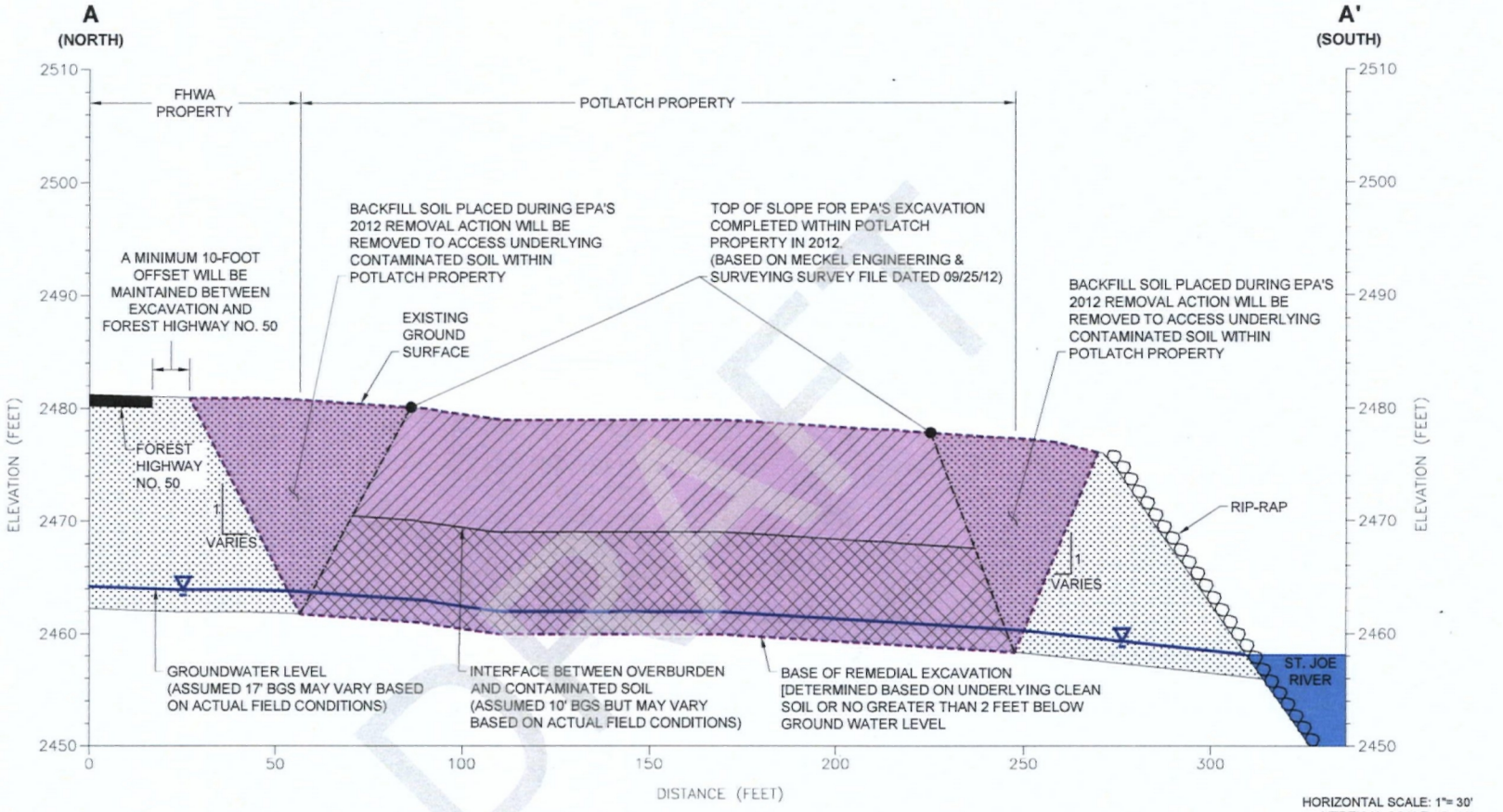
(III) Excavate backfill/slope armor placed during EPA's 2012 Removal Action.

Removal Action Plan

Avery Landing Site
Avery, Idaho

GeoEngineers | **Figure 4**

P:\2\2315\0\02\CAD\Permit Figures\2315\0-02 Fig 4 Remedial Excavation Plan with Tree_Utility Buffers.dwg\TAB:LANDSCAPE Modified by THICHAUD on Dec 26, 2012 - 12:49



HORIZONTAL SCALE: 1"= 30'
VERTICAL SCALE: 1"= 10'
VERTICAL EXAGGERATION: 3X

30 0 30
FEET

Notes

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Existing topographic contours, property boundaries, site features including asphalt/concrete/gravel surfaces, existing trees and underground utilities are based on Meckel Engineering & Surveying survey file dated May 24, 2012 and September 25, 2012.

Legend

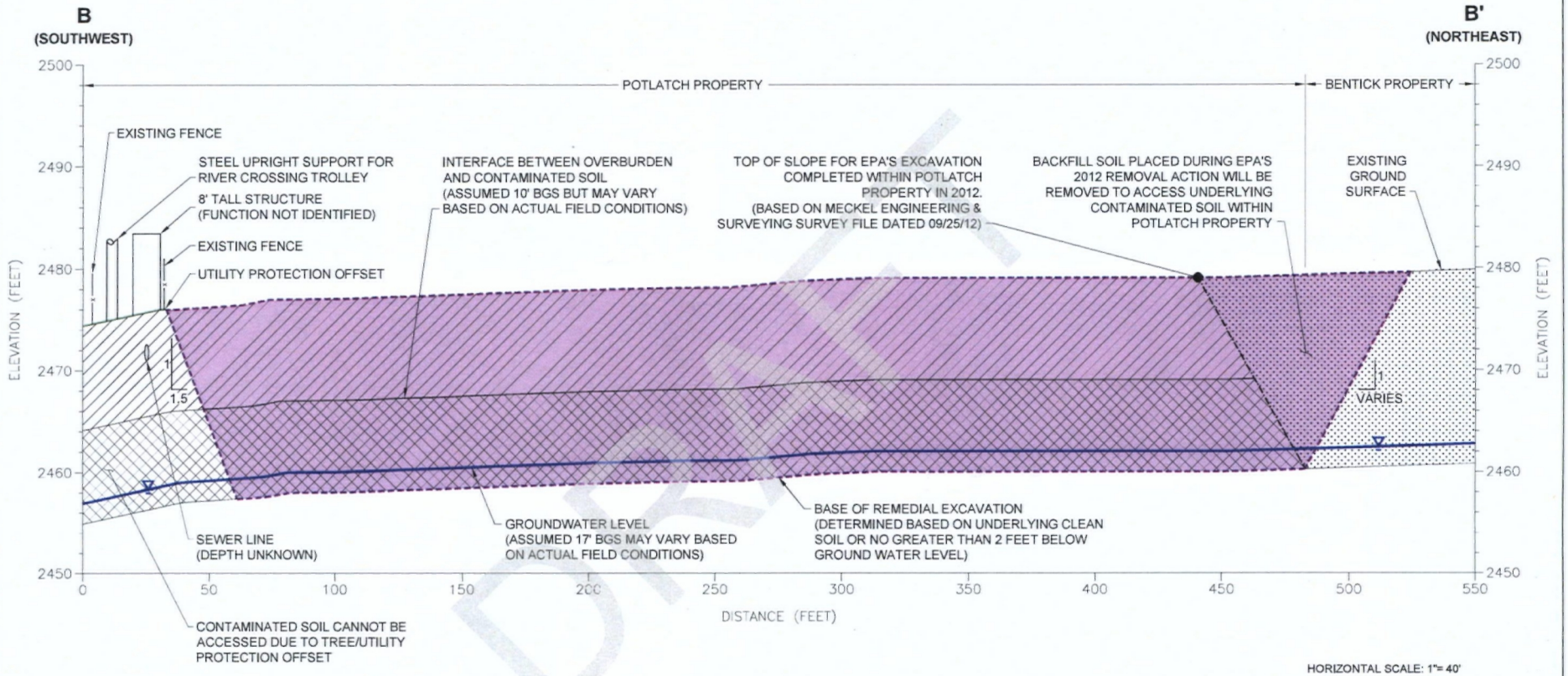
- Maximum Expected Limits of Remedial Excavation
- Excavation Sideslopes of EPA's 2012 Removal Action/ Restoration (Slope Assumed)
- Backfill Soil Placed during EPA's 2012 Removal Action
- Overburden Soil
- Contaminated Soil

Cross-Section A-A'

Avery Landing Site
Avery, Idaho

GeoEngineers

Figure 5



HORIZONTAL SCALE: 1"= 40'
VERTICAL SCALE: 1"= 10'
VERTICAL EXAGGERATION: 4X

40 0 40
FEET

Notes

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Existing topographic contours, property boundaries, site features including asphalt/concrete/gravel surfaces, existing trees and underground utilities are based on Meckel Enginineering & Surveying survey file dated May 24, 2012 and September 25, 2012.

Legend

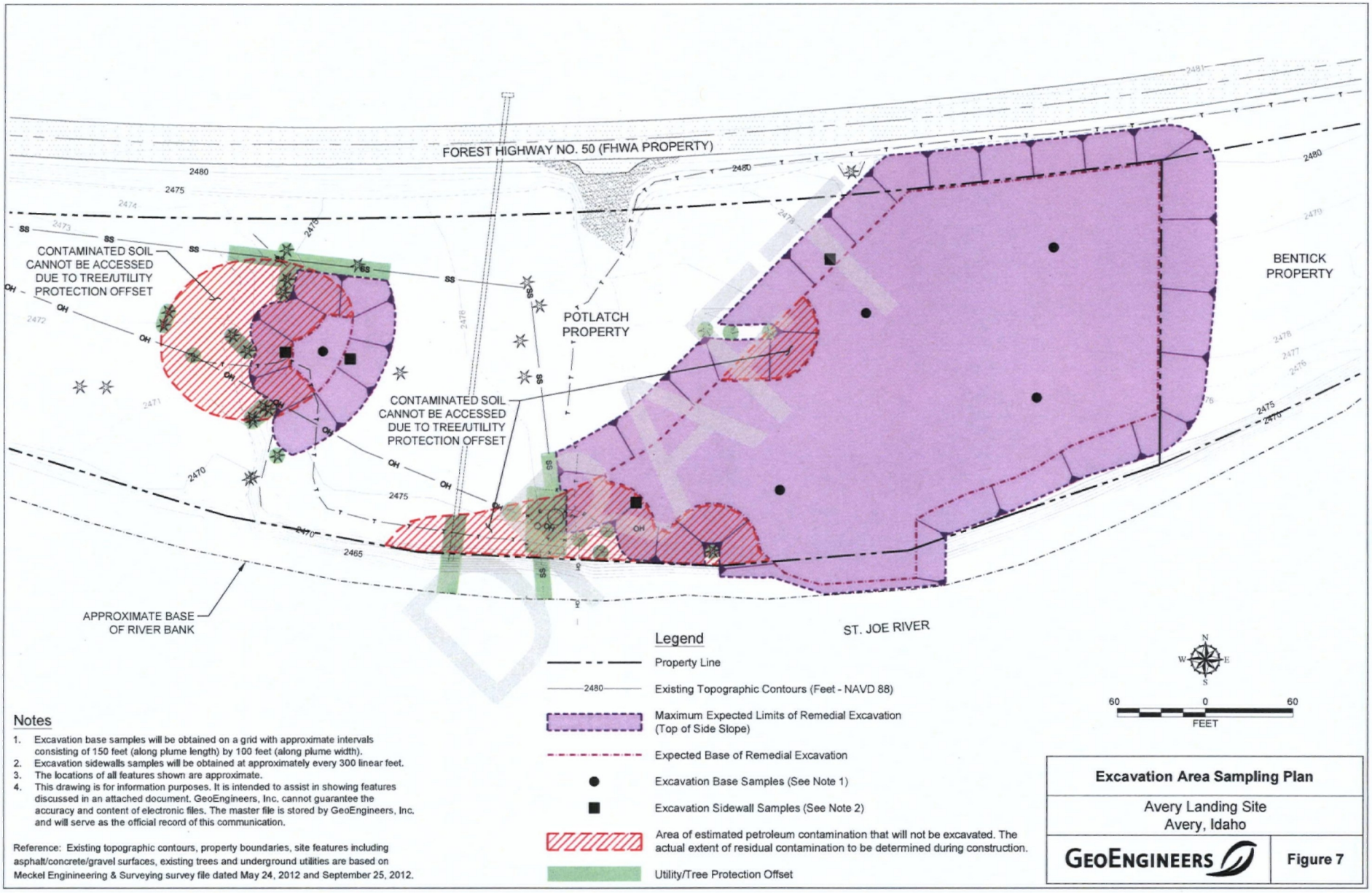
- Maximum Expected Limits of Remedial Excavation
- Excavation Sideslopes of EPA's 2012 Removal Action / Restoration (Slope Assumed)
- Backfilled Soil Placed during EPA's 2012 Removal Action/ Restoration
- Overburden Soil
- Contaminated Soil

Cross-Section B-B'

Avery Landing Site
Avery, Idaho

GeoEngineers

Figure 6



Legend

- Property Line
- 2480 — Existing Topographic Contours (Feet - NAVD 88)
- Maximum Expected Limits of Remedial Excavation (Top of Side Slope)
- Expected Base of Remedial Excavation
- Excavation Base Samples (See Note 1)
- Excavation Sidewall Samples (See Note 2)
- Area of estimated petroleum contamination that will not be excavated. The actual extent of residual contamination to be determined during construction.
- Utility/Tree Protection Offset

N W E S

60 0 60
FEET

Notes

1. Excavation base samples will be obtained on a grid with approximate intervals consisting of 150 feet (along plume length) by 100 feet (along plume width).
2. Excavation sidewalls samples will be obtained at approximately every 300 linear feet.
3. The locations of all features shown are approximate.
4. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

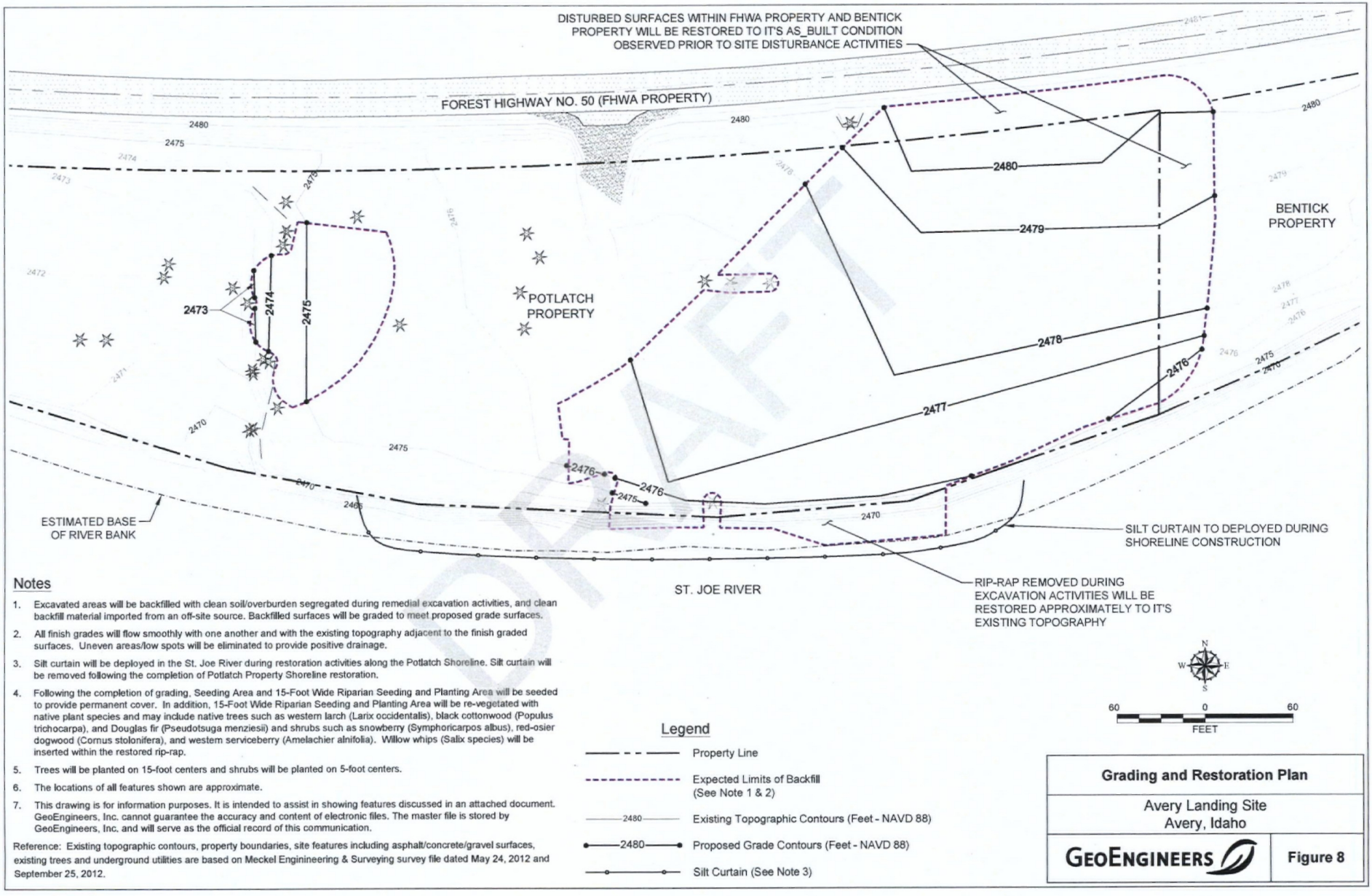
Reference: Existing topographic contours, property boundaries, site features including asphalt/concrete/gravel surfaces, existing trees and underground utilities are based on Meckel Engineering & Surveying survey file dated May 24, 2012 and September 25, 2012.

Excavation Area Sampling Plan

Avery Landing Site
Avery, Idaho

GeoEngineers | Figure 7

P:\123150\021\CAD\PERMIT FIGURES\123150-02 FIG 7 SAMPLING AND ANALYSIS PLAN.DWG\TAB:LANDSCAPE MODIFIED BY THICHAUD ON DEC 26, 2012 - 12:58



Notes

1. Excavated areas will be backfilled with clean soil/overburden segregated during remedial excavation activities, and clean backfill material imported from an off-site source. Backfilled surfaces will be graded to meet proposed grade surfaces.
2. All finish grades will flow smoothly with one another and with the existing topography adjacent to the finish graded surfaces. Uneven areas/low spots will be eliminated to provide positive drainage.
3. Silt curtain will be deployed in the St. Joe River during restoration activities along the Potlatch Shoreline. Silt curtain will be removed following the completion of Potlatch Property Shoreline restoration.
4. Following the completion of grading, Seeding Area and 15-Foot Wide Riparian Seeding and Planting Area will be seeded to provide permanent cover. In addition, 15-Foot Wide Riparian Seeding and Planting Area will be re-vegetated with native plant species and may include native trees such as western larch (Larix occidentalis), black cottonwood (Populus trichocarpa), and Douglas fir (Pseudotsuga menziesii) and shrubs such as snowberry (Symphoricarpos albus), red-osier dogwood (Cornus stolonifera), and western serviceberry (Amelachier alnifolia). Willow whips (Salix species) will be inserted within the restored rip-rap.
5. Trees will be planted on 15-foot centers and shrubs will be planted on 5-foot centers.
6. The locations of all features shown are approximate.
7. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Existing topographic contours, property boundaries, site features including asphalt/concrete/gravel surfaces, existing trees and underground utilities are based on Meckel Enginineering & Surveying survey file dated May 24, 2012 and September 25, 2012.

Legend

- Property Line
- Expected Limits of Backfill (See Note 1 & 2)
- 2480 Existing Topographic Contours (Feet - NAVD 88)
- 2480 Proposed Grade Contours (Feet - NAVD 88)
- Silt Curtain (See Note 3)

Grading and Restoration Plan

Avery Landing Site
Avery, Idaho

GeoEngineers

Figure 8

P:\123\50102\CAD\Permit Figures\123\50102-02 Fig 8 Grading and Restoration Plan.dwg\TAB:LANDSCAPE Modified by THICHAUD on Dec 26, 2012 - 13:00